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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,720	08/25/2003	Joseph H. Lyons	1857.2030000	9846
28393	7590	10/19/2006	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C. 1100 NEW YORK AVE., N.W. WASHINGTON, DC 20005			CYGAN, MICHAEL T	
			ART UNIT	PAPER NUMBER
			2855	

DATE MAILED: 10/19/2006

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**GROUP 2800**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/646,720  
Filing Date: August 25, 2003  
Appellant(s): LYONS, JOSEPH H.

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Jason D. Eisenberg  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed August 23, 2006 appealing from the Office action mailed December 13, 2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

4,953,388	BARADA	9-1990
4,604,892	CARRERAS	8-1986

3,948,082	ZUMBACH	4-1976
5,317,898	NEMETH	6-1994

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Carraras (US 4,604,892). Barada teaches an air gauge sensor comprising dividing portion [32], reference channel [42], measurement channel [40], flow restrictors [44,46] in both channels, mass flow sensor [50] coupled to both channels and to a controller (Figure 2), and a mass flow controller [20] coupled to a filter [30] acting as a snubber; see entire document, especially Figure 1. Barada teaches the method for proximity sensing with the abovedescribed apparatus; see abstract and column 3. Barada teaches the claimed invention except for an elongated orifice, particularly having the claimed dimensions. With respect to the "such that...low sensitivity areas", the specification reveals this advantage to flow from either the matching of the orifice footprint to the surface features (paragraph 0048), or to the elongated dimensions of the nozzles (paragraph 0023).

Carreras teaches the use of a rectangular orifice having a shape homothetic of that of the deposit to be measured; see Figure 4 lines 6-9 and Figures 1 and 5. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a rectangular orifice as taught by Carreras in the invention taught by Barada to form the orifices, since Carreras

teaches that this "essential feature" allows the equivalent of a volume to be measured; see column 4 lines 6-9.

With respect to the ranges of dimension claimed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claims 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Zumbach (US 3,948,082). Barada teaches an air gauge sensor comprising dividing portion [32], reference channel [42], measurement channel [40], flow restrictors [44,46] in both channels, mass flow sensor [50] coupled to both channels and to a controller (Figure 2), and a mass flow controller [20] coupled to a filter [30] acting as a snubber; see entire document, especially Figure 1. Barada teaches the method for proximity sensing with the abovedescribed apparatus; see abstract and column 3. Barada teaches the claimed invention except for an elongated orifice, particularly having the claimed dimensions. With respect to the "such that...low sensitivity areas", the specification reveals this advantage to flow from either the matching of the orifice footprint to the surface features (paragraph 0048), or to the elongated dimensions of the nozzles (paragraph 0023).

Zumbach teaches the use of a longitudinal sensing slit [34] for measuring air gaps; see column 8 and Figure 4. It have been obvious to one having ordinary skill in the art at the time the invention was made to use a rectangular orifice as taught by Zumbach in the invention taught by Barada to form the orifices, since Zumbach teaches that this eliminates the need for exact lateral guidance, since the air gap is in the form of a homogeneous field; see column 8 lines 60+.

With respect to the ranges of dimension claimed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Carraras (US 4,604,892) as applied to claim 19, further in view of Nemeth (US 5,317,898). The claimed invention is considered to be taught except for the use of a flat metal plate which holds the measured substrate as a reference surface. Nemeth teaches the use of a flat metal plate which holds the measured substrate as a reference surface (Figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a flat supporting plate as taught by Nemeth in the invention taught by Barada to detect thickness, since this would reduce

measurement error from outside sources (i.e., sources affecting surface 66, but not 68). Using the supporting surface as the reference is desirable as further taught by Nemeth at column 2 lines 25-53.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Zumbach (US 3,948,082) as applied to claim 19, further in view of Nemeth (US 5,317,898). The claimed invention is considered to be taught except for the use of a flat metal plate which holds the measured substrate as a reference surface. Nemeth teaches the use of a flat metal plate which holds the measured substrate as a reference surface (Figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a flat supporting plate as taught by Nemeth in the invention taught by Barada to detect thickness, since this would reduce measurement error from outside sources (i.e., sources affecting surface 66, but not 68). Using the supporting surface as the reference is desirable as further taught by Nemeth at column 2 lines 25-53.

1. Claims 39-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Carraras (US 4,604,892). Barada teaches an air gauge sensor comprising dividing portion [32], reference channel [42], measurement channel [40], flow restrictors [44,46] in both channels, mass flow sensor [50] coupled to both channels and to a controller (Figure 2), and a

mass flow controller [20] coupled to a filter [30] acting as a snubber; see entire document, especially Figure 1. Barada teaches the claimed invention except for an elongated orifice, particularly having the claimed dimensions.

Carreras teaches the use of a rectangular orifice having a shape homothetic of that of the deposit to be measured; see Figure 4 lines 6-9 and Figures 1 and 5. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a rectangular orifice as taught by Carreras in the invention taught by Barada to form the orifices, since Carreras teaches that this "essential feature" allows the equivalent of a volume to be measured; see column 4 lines 6-9.

With respect to the ranges of dimension claimed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

2. Claims 39-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barada (US 4,953,388) in view of Zumbach (US 3,948,082). Barada teaches an air gauge sensor comprising dividing portion [32], reference channel [42], measurement channel [40], flow restrictors [44,46] in both channels, mass flow sensor [50] coupled to both channels and to a controller (Figure 2), and a mass flow controller [20] coupled to a filter [30] acting as a snubber; see



entire document, especially Figure 1. Barada teaches the claimed invention except for an elongated orifice, particularly having the claimed dimensions.

Zumbach teaches the use of a longitudinal sensing slit [34] for measuring air gaps; see column 8 and Figure 4. It have been obvious to one having ordinary skill in the art at the time the invention was made to use a rectangular orifice as taught by Zumbach in the invention taught by Barada to form the orifices, since Zumbach teaches that this eliminates the need for exact lateral guidance, since the air gap is in the form of a homogeneous field; see column 8 lines 60+.

With respect to the ranges of dimension claimed, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the claimed ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

## **(10) Response to Argument**

### **A. Question Presented**

The question presented by appellant in this appeal is: in order to be analogous art, must secondary references be drawn to only and exactly the field of art represented narrowly by the limitations of the claimed invention, or generally by the field of endeavor of the claimed invention.

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B. Applicable Rule

MPEP 2141.01(a) addresses the judicial guidance on determination of whether of not a reference is analogous art:

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

"A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992).

For example, the Federal Circuit has held that a hair brush and a tooth brush may be considered analogous art in *In re Bigio*, 381 F.3d 1320, 1325-26, 72 USPQ2d 1209, 1211-12 (Fed. Cir. 2004), summarized at MPEP 2141.01(a):

The patent application claimed a "hair brush" having a specific bristle configuration. The Board affirmed the examiner's rejection of the claims as being obvious in view of prior art patents disclosing toothbrushes. 381 F.3d at 1323, 72 USPQ2d at 1210. The applicant disputed that the patent references constituted analogous art. On appeal, the court upheld the Board's interpretation of the claim term "hair brush" to encompass any brush that may be used for any bodily hair, including facial hair. 381 F.3d at 1323-24, 72 USPQ2d at 1211. With this claim interpretation, the court applied the "field of endeavor test" for analogous art and determined that the references were within the field of applicant's endeavor and hence was analogous art because toothbrushes are structurally similar to small brushes for hair, and a toothbrush could be used to brush facial hair. 381 F.3d at 1326, 72 USPQ2d at 1212.

Even though the toothbrush can be used for different applications than the hair brush (e.g., interacting with toothpaste to form a lather, reaching between the crevasses

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between teeth, interacting with teeth at the ends of the bristles rather than between the bristles as a hair brush), the court found that they were analogous due to the presence of common structural features, and the ability of the tooth brush to function as a hair brush.

C. The References are Analogous

1. *Fields of Endeavor of Zumbach and Carreras are Air Gauges*

Zumbach and Carreras both disclose nozzles that are used in a nozzle/surface distance measurement. Zumbach discloses the application of pressure to two nozzles, measuring the pressure difference between the two nozzles, and correlating that pressure difference to a distance of one of the nozzles from the test surface; see column 7 lines 27-68 and column 8 lines 46-68. While appellant focuses on the additional inductance measurements performed, Zumbach's invention is primarily concerned with improvements to the types and shapes of nozzles for better probe/surface distance measurement. See for instance the detailed disclosure of nozzle dimensions in Figure 6, and the different arrangements of nozzles for different surfaces in Figures 1, 4, 7, and 8.

Carreras discloses a method used "[f]or some tens of years" in which the "the closer the nozzle is to the surface to be measured the more the pressure increases at the outlet ... widely used in precision mechanics." Carreras column 3 lines 30-37. The nozzle is shaped such as to produce a jet having features similar to the surface feature desired to be measured. Carreras column 4 lines 6-14. In particular, Carreras discloses elongated rectangular jets 6,7 produced from elongated nozzles. Carreras

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column 4 lines 45-58 and Figure 1. The probe nozzle is loaded with a pressure, that pressure is compared to a reference pressure, and from this comparison a nozzle/surface distance is obtained. Carreras Figure 2 and column 5 lines 39-42.

*2. Zumbach, Carreras, and Appellant's Invention are in the Same Field of Endeavor*

Applying the *Bigio* test, the secondary references (Zumbach, Carreras) are analogous to applicant's claimed invention. The Zumbach and Carreras references have common structural features with appellant's invention, in the form of air nozzles constructed to be placed above a surface in the context of pressure/distance testing. See Zumbach, Figure 4; Carreras, Figures 1 and 2; and appellant's Figure 1. The Zumbach and Carreras references have a common function with appellant's invention, in the form of the application of the air nozzles to the determination of the surface topography by measuring the pressure at the nozzle as a function of the distance between the nozzle and the measured surface.

Just as a toothbrush can brush any type of hair, including facial hair, air nozzles for pressure/distance measurement testers can be used in any pressure/distance measurement tester, including the balanced arm types of appellant's invention and that of Barada. The presence of additional features of the testers of Zumbach and Carreras (such as the additional measurement device in Zumbach of the measurement coil 18) does not serve to remove the references from the air pressure/distance measurement art, in the same way that the additional features of a toothbrush (holding toothpaste) do not serve to remove the toothbrush from the brush art in *Bigio*. Each of the references

is, like appellant's invention, concerned with improvements in air gauge technology to better measure the distance between a probe and a surface.

### *3. Appellant's Remarks are Unconvincing*

Appellant focuses on the use in Bigio of "claimed invention" in attempting to distinguish the applied references as non-analogous. Appeal Brief, page 14, first para. Appellant errs in two important respects in this argument. First, while appellant places emphasis on the "claimed invention," appellant argues features that are not in at least some of the claims. Most significantly is appellant's reliance on "air gauge" as appellant's field of endeavor when claim 19 does not mention that term. Appellant also refers to the field of endeavor as "nanometer level measurements" despite the lack of such a limitation in the claims. Appeal Brief, page 14, second para. Second, appellant appears to argue that the field of endeavor is limited by the claim limitations; i.e., assuming appellant had claimed nanometer scale, only art concerning air gauges operating on the nanometer scale would be analogous. Such a narrow reading is inconsistent with the broad terms of Oetiker ("field of applicant's endeavor or, if not, then be reasonably pertinent") and Clay ("logically would have commended itself to an inventor's attention in considering his problem").

### *4. Appellant's Hindsight Argument is Unconvincing*

Appellant argues that impermissible hindsight was used at page 14. Appellant's argument is actually based on the fact that the art is not analogous ("would not look to the nozzles of Zumbach of Zumbach or Carreras, which relate to electrical measuring"),

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rather than upon an improper hindsight reconstruction. The proper standard for hindsight is set forth in *McLaughlin*:

“[a]ny judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.”  
*In re McLaughlin* 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971).

Appellant has not met the burden of presenting a reason why the combination of references was motivated solely by applicant’s disclosure. The rejection presents motivation drawn from the references themselves. Carreras teaches that this “essential feature” allows the equivalent of a volume to be measured and thereby disregards the unwanted effects of irregularities in the measured section; see column 4 lines 6-9. Zumbach teaches that the probe shape is designed to be insensitive to asymmetries; see column 8 lines 38-45. The addition of such features to the invention of Barada, which has only a generic probe shape (Figure 1) would be expected to result in those particular advantages being gained by the invention of Barada. This meets the test for proper motivation best stated in *Sernaker*, that “the strongest rationale for combining references is ... that some advantage or expected beneficial result would have been produced by their combination.” *In re Sernaker*, 702 F.2d 989, 994-95, 217 USPQ 1, 5-6 (Fed. Cir. 1983).

#### 5. Appellant’s Focus on Inventor’s Problem is Not Convincing

In response to appellant’s argument on page 15 of the Appeal Brief that appellant’s combination is for the purpose of increasing sensitivity, the fact that

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appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

*6. Appellant's Argument That the Combination Would Render Barada Inoperable is Unconvincing*

Appellant argues on page 17 that combination of either Zumbach or Carreras with Barada would render Barada unsuitable for its intended purpose or change its principle of operation. However, replacing the generic nozzle of Barada with an elongated nozzle shape (as taught by either Zumbach or Carreras) would not appear to unduly influence the operation of Barada.

The "inoperable combination" is found when the new feature would conflict with some required feature of the old device. For instance, inoperability has been found where the a new feature of resiliency was attempted to be combined with an old device that required rigidity. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Here, Barada does not require any particular nozzle shape. The combination of Barada with an elongated nozzle could not render Barada inoperative unless Barada disclosed that a non-elongated nozzle shape is required for proper operation. Such requirement of a non-elongated nozzle shape is not found in Barada. Furthermore, even though the test is not, as argued by appellant on page 17, whether Barada's invention could be applied to the applications of Zumbach or Carreras, it is noted that there is no

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indication that Barada could not be applied to cylindrical objects as per Zumbach, or to surfaces having material deposited thereon, as per Carreras.

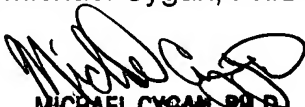
**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

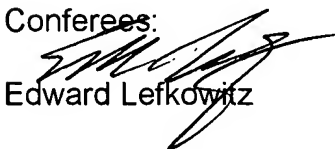
For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Michael Cygan, Ph.D.

  
MICHAEL CYGAN, Ph.D.  
PRIMARY EXAMINER

Conferees:

  
Edward Lefkowitz

Darren E. Schuberg

